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NOV 1982?

WESTERN PROCESSING COMPANY, INC.
KENT, WASHINGTON
REPORT ON PRELIMINARY GEOLOGIC INVESTIGATION

TDD R10-8301-07

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1.0 INTRODUCTION

This report summarizes the geologic and hydrologic conditions encountered at the Western Processing Company, Inc., during a preliminary investigation conducted in October, 1982. The purpose of this investigation was to determine whether the company was in compliance with federal laws governing the disposal of hazardous wastes.

Several test wells were installed at the site to provide information on the groundwater quality and hydrology, and assist in determining whether contamination was migrating from the site into surface and groundwater resources. The investigation included a groundwater and soil column sampling program as well as an examination of geologic subsurface conditions.

2.0 SITE LOCATION AND DESCRIPTION

The Western Processing facility is situated in the NW 1/4, SE 1/4, NW 1/4 of Section 1, Township 22 N., Range 4 E., at latitude 47°25'31"N, longitude 122°14'31"W. The street address is 7215 South 196th St., which is located about 4 miles north of the City of Kent and about one mile southeast of the Green River (Figure 1).

The facility occupies approximately 13 acres and consists of a small laboratory, a chemical recycling facility, drum storage areas, a fertilizer plant, bulk storage tanks containing reclaimed solvents, above-ground storage lagoons for liquid wastes, cooling water, and surface water collected from sump pumps, piles of flue dust, and construction debris. King County Drainage Ditch #1 (also known as Mill Creek) runs adjacent to the northwest corner of the site; a powerline drainage ditch and a railroad drainage ditch run north/south along the eastern property boundary. The Burlington Northern railroad line also runs north/south along the eastern site boundary.

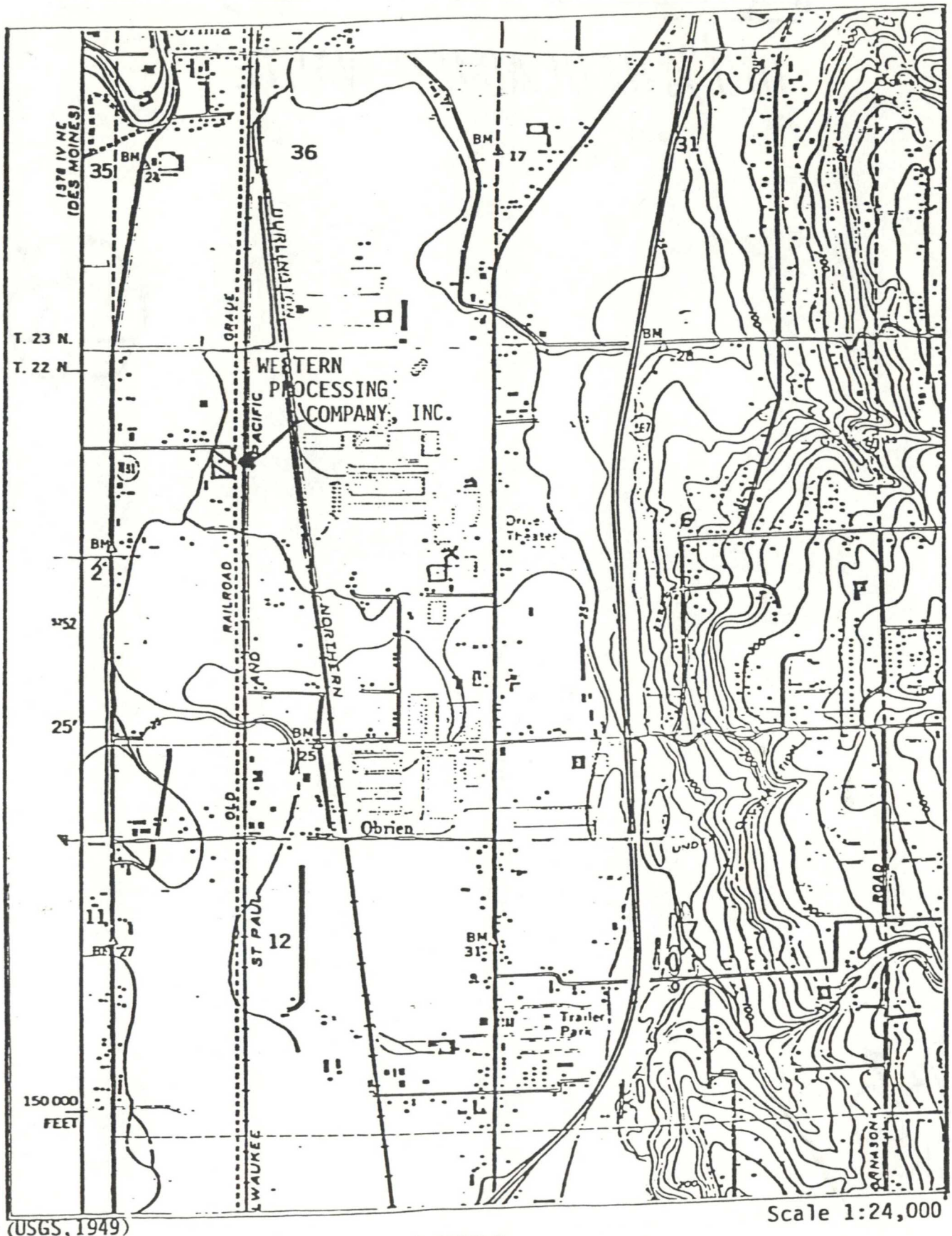


FIGURE 1
LOCATION MAP
WESTERN PROCESSING COMPANY, INC.
KENT, WASHINGTON

3.0 SITE HISTORY

Western Processing Company, Inc., began operations in 1957 as an animal by-product/brewer's yeast reprocessor. Over the years their operation has been expanded to include recycling and reclaiming of hazardous waste materials. At present, the company has Interim Status as a storage facility for hazardous materials under the Resource Conservation and Recovery Act (RCRA). However, they are not operating under any state or local waste discharge permits. As a result, not much is known about their past disposal practices.

4.0 GENERAL GEOLOGY

The Western Processing site is located in the Duwamish Valley physiographic region of the Puget Sound Lowland. The lowland is a topographic basin extending from the Cascade Mountains to the Olympic Mountains and consists of a broad drift plain which has been cut by a network of marine embayments. Ground surface elevations range from 10 to 600 feet above mean sea level.

The project area is drained by the Green, White and Cedar Rivers. These streams originate from the Cascade Mountains, enter the Duwamish Valley and empty into Puget Sound. The principal geologic units are Tertiary age volcanics and sediments, Quaternary glacial deposits and Recent alluvium. The Tertiary deposits consist of sand, silt, clay, gravel, till and volcanic ash. These deposits are not exposed anywhere in the study area and are covered by several hundred feet of younger glacial and alluvial sediments.

The glacial deposits consist of lacustrine sediments, outwash sediments and till. The general Puget Sound Lowland area is known to have been invaded by continental glaciers at least four different times. Most of the glacial deposits exposed in the project area were deposited during the last period of glaciation which is referred to as the Vashon Stade of the Fraser Glaciation.

Recent alluvial deposits underlie the Duwamish Valley and some smaller stream valleys within the project area. These sediments consist of sand, gravel, silt and clay which were deposited by fluvial action (Mullineaux, 1970).

5.0 SITE GEOLOGY

The Western Processing facility is located on the Green River floodplain at an elevation of about 20 feet. The natural topography of the area is essentially flat; however, some areas of the site have been covered with artificial fill and/or piles of debris. The ground surface elevation ranges from 20 to 30 feet above mean sea level.

In addition to fill materials, the site area is underlain by post-glacial alluvium laid down by the Green and White Rivers. The alluvium deposits are several hundred feet thick and consist of sand, silt and clay. Below the alluvium lies glacial deposits of Pleistocene age (Luzier, 1969).

Surface water runoff from the Western Processing site drains to Mill Creek. Drainage from the site can enter Mill Creek from several directions: northwest by direct surface flow or by seepage through the ground; east into a drainage ditch which flows north to the creek; or south to a ponding area which would eventually flow to the creek by subsurface flow (Aldis, 1982).

5.1 GROUNDWATER

Groundwater exists under both water table conditions and artesian conditions. The water table aquifer is recharged by percolation from the surface and discharges to ditches and streams that eventually join the Duwamish River. A lower aquifer exists under artesian conditions, below semi-permeable layers of silt and clay.

6.0 FIELD INVESTIGATION

Information on the subsurface geology was obtained during the installation of several monitoring wells in October, 1982. The wells were constructed for the purpose of obtaining samples of the groundwater and the underlying sediments. The types of geologic materials and the corresponding depths at which they were encountered were logged during drilling and are included as Appendix A. Geologic cross-sections are presented as Appendix B.

6.1 METHOD OF INVESTIGATION

Monitoring wells were drilled at 24 on-site locations and six off-site locations (Figure 2). The on-site wells were located roughly around the perimeter of the site and along a north/south trending line bisecting the property. Most of the wells were drilled no deeper than 16 feet with the exception of numbers 1B, 11B, 17B, 22B, and 25B, which were drilled to 30 feet. Methods of drilling included backhoe, cable tool and power auger.

6.2 SAMPLING PROCEDURES

Core samples were routinely collected at 3-foot depth intervals to obtain information on the subsurface materials and to determine whether contamination from the site was infiltrating the ground surface. The depth to which samples were collected depended largely on the drilling method. Table 1 lists the method of drilling, method of sampling, depth to well point and depths at which samples were collected for each sampling location.

FIGURE 2
MONITORING WELL LOCATIONS
WESTERN PROCESSING CO., INC.

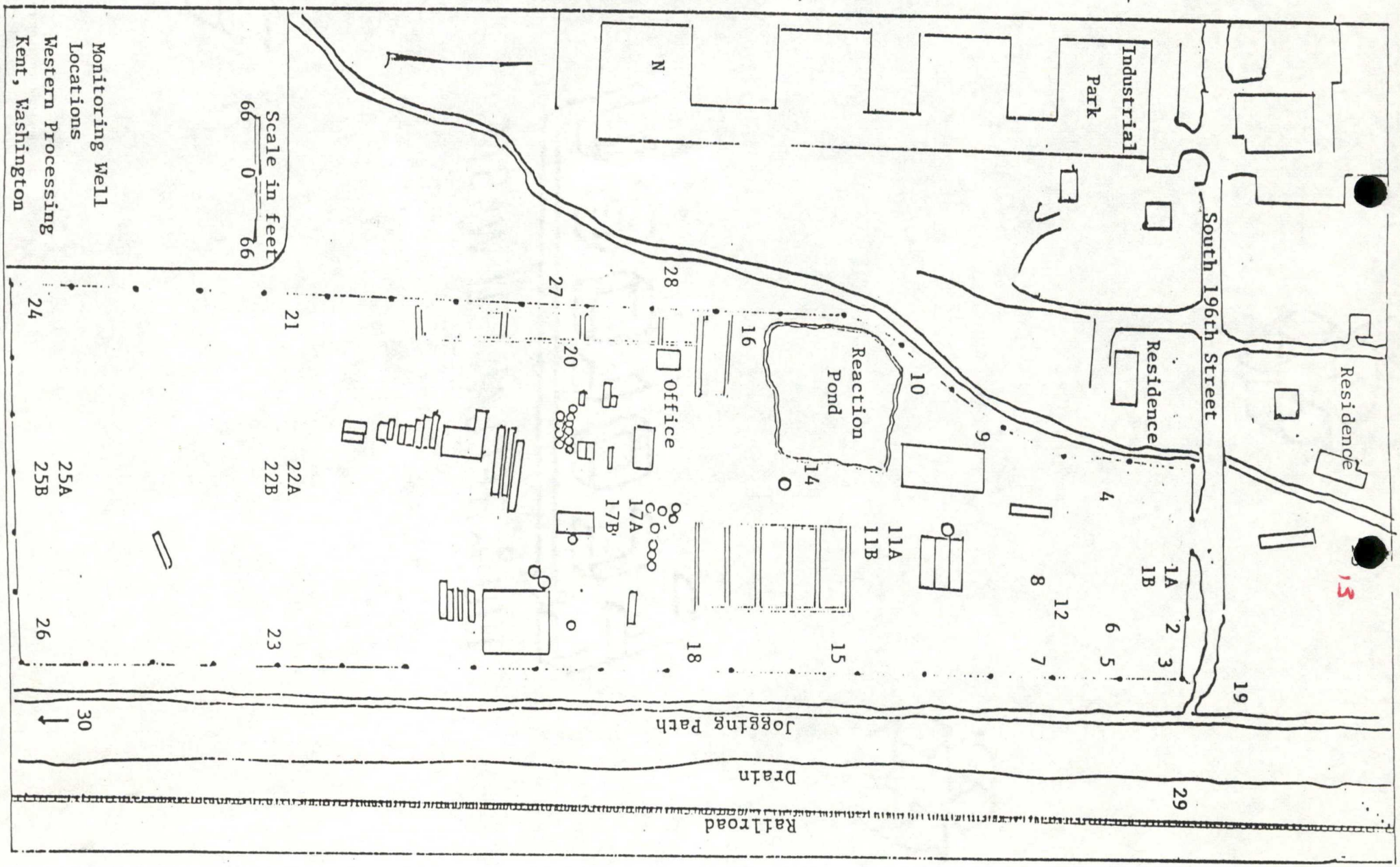


TABLE 1
SUMMARY OF CORE SAMPLING DATA
WESTERN PROCESSING COMPANY, INC.

Well Number	Method of Drilling	Method of Sampling	Depth to Well Point (ft.)	Depths at which samples were collected (ft.)									
				3	6	9	12	15	18	21	24	27	30
1A	backhoe	backhoe	12	x	x	x	x						
1B	cable tool	---	30										
2	auger	auger	12	x	x	x	x	x					
3	auger	auger	12	x	x	x							
4	auger	auger	15	x	x	x							
5	auger	auger	12	x	x	x	x						
6	auger	auger	12	x	x	x	x						
7	auger	auger	12	x	x	x							
8	cable tool	auger	16	x	x	x							
9	auger	auger	15	x	x	x	x						
10	auger	auger	15	x	x	x	x	x					
11A	backhoe	backhoe	12	x	x	x*	x						
11B	cable tool	---	29										
12	auger	auger	11	x	x	x	x	x					
13	auger	auger	9	x	x	x							
14	auger	auger	15	x	x	x	x	x					
15	cable tool	auger	16	x	x	x							
16	auger	auger	15	x	x	x	x	x					
17A	cable tool	cable tool	15	x	x	x	x	x					
17B	cable tool	cable tool	30						x	x	x	x	x
18	cable tool	auger	16	x	x	x							
19	auger	auger	6	x	x	x	x						
20	auger	auger	15	x	x	x	x	x					
21	auger	auger	15	x	x	x	x	x					
22A	cable tool	cable tool	15	x	x	x	x	x					
22B	cable tool	---	27										
23	cable tool	auger	15	x	x	x							
24	auger	auger	15	x	x	x	x	x					
25A	cable tool	auger	16	x	x	x							
25B	cable tool	---	26										
26	cable tool	auger	16	x	x	x							
27	auger	auger		x	x								

*Samples collected at 8 ft. and 10 ft.

6.3 SUBSURFACE CONDITIONS ENCOUNTERED

6.3.1 Subsurface Site Geology

The subsurface materials encountered at Western Processing consisted of a layer of artificial fill overlying deposits of sand, silt, and clay, with some peat (Appendix B). These deposits are thinly bedded and highly variable making it difficult to trace any distinct layers.

Artificial fill consisted of light to dark brown gravel and coarse sands which were usually found at the surface and ranged in thickness from one to seven feet in depth. Fill was encountered at all the on-site drilling locations with the exception of numbers 14, 15, 16, 25, and 26, where only natural materials were encountered.

Underlying the fill are interfingering deposits of sands and silts. The sands are medium to fine grained and generally light brown or grayish brown in color. These sand and silty sand deposits were encountered at all drilling sites at depths ranging from 0 to 28 feet; thickness varied from one to 14 feet.

The silt deposits were gray to grayish brown in color and commonly contained clay-sized particles. The finer grained deposits were generally found at greater depths, ranging from five to 25 feet; thickness ranged from one to nine feet.

A clay layer underlies most of the Western Processing site from five to 12 feet below the ground surface. It is believed to be of lacustrine origin as these deposits are fairly common in the Duwamish Valley (Mullineaux, 1970). The clay is very dense, gray to bluish gray in color and contains

organic material. Thickness varies from one to four feet. The layer is not continuous and was encountered underlying the northern portion of the site. Specifically, the clay was encountered at wells number 1A, 2, 4, 5, 6, 7, 10, 11A, 13, 19, 20 and 26.

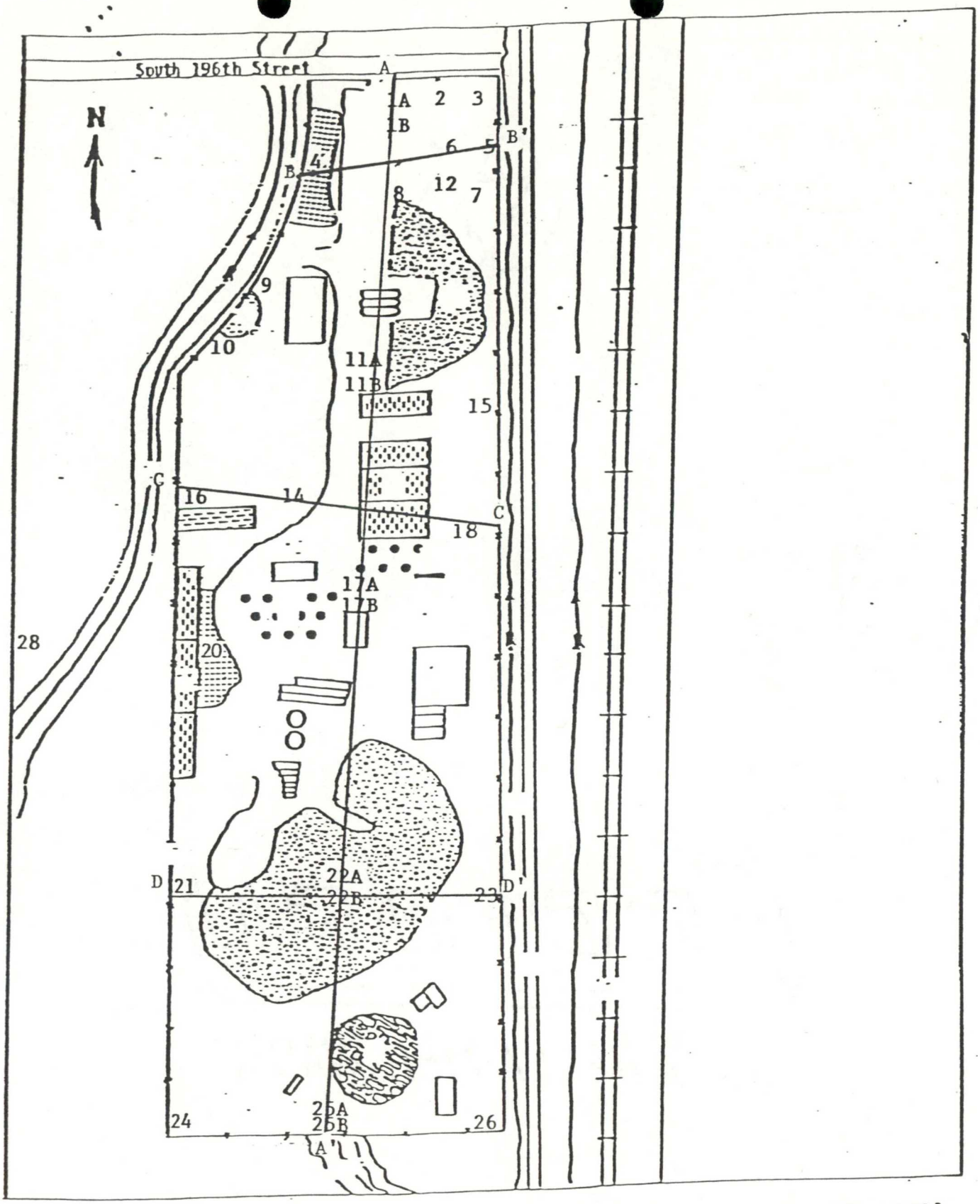
Below the clay layer lies more sand and silt deposits. There were no major differences noted between this layer and the overlying clay deposits except that the lower sediments held a greater amount of water.

6.3.2 Groundwater

The water table in the area is very shallow. Depth to groundwater ranged from three to 12 feet but generally averaged about six feet. The water table aquifer lies above semi-permeable layers of silt and clay. It is recharged through surface water percolation and discharges to the nearby county drainage ditch. Direction of movement is generally toward the northwest.

A lower aquifer lies below the semi-permeable layers and exists under artesian conditions. At monitoring well No. 19, water was flowing at the surface following penetration of the clay layer.

APPENDIX B
GEOLOGIC CROSS SECTIONS



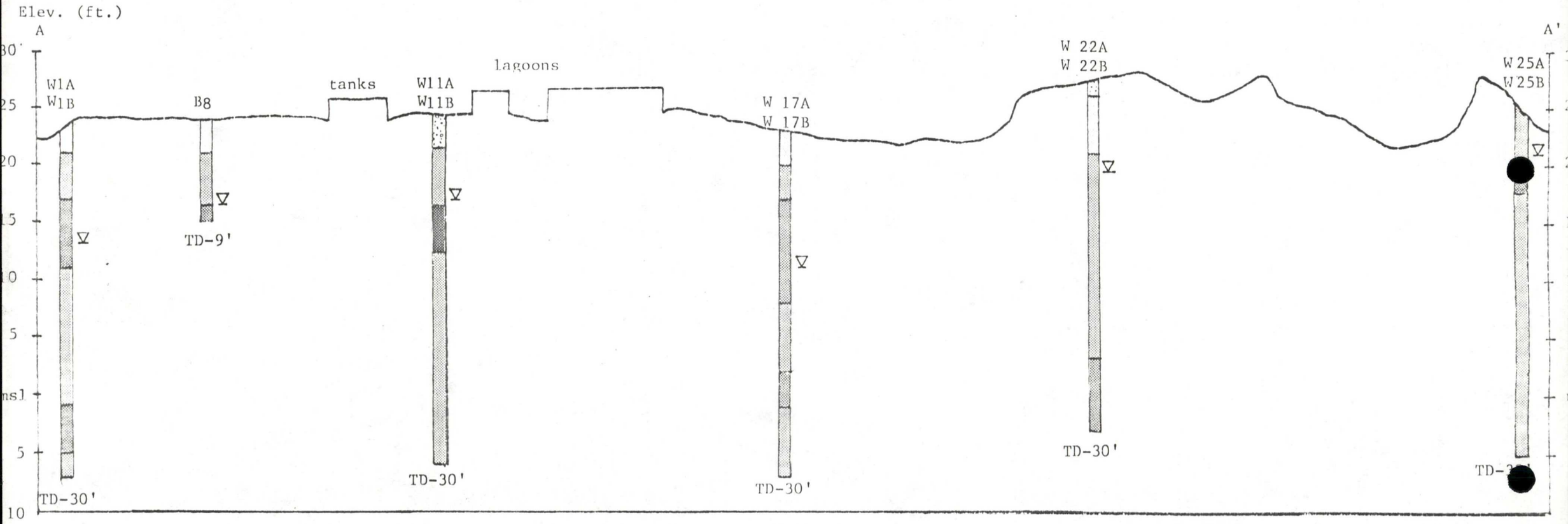
developed from aerial photograph

scale: 1" = 200'

LOCATION OF
GEOLOGIC CROSS SECTIONS
WESTERN PROCESSING COMPANY, INC.

WESTERN PROCESSING COMPANY, INC.

GEOLOGIC CROSS SECTION A-A'



EXPLANATION

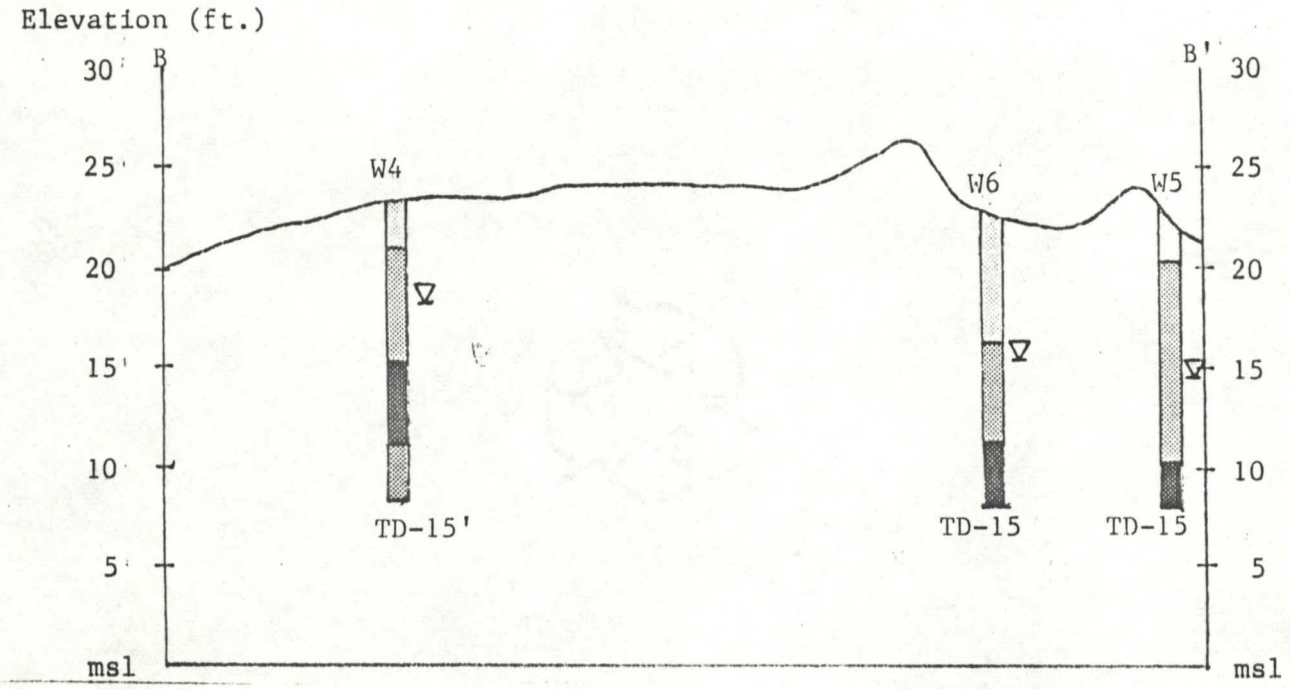
Horizontal scale: 1:1200
Vertical scale: 1:120

- Debris, man-made materials
- Gravel, sand & gravel (coarse grained material)
- Sand, silty sand (medium grained material)
- Silt, clayey silt (fine grained material)
- Clay

▽ = Ground water level
msl = Mean sea level
W = Monitoring well
B = Bore hole
TD = Total depth

WESTERN PROCESSING COMPANY, INC.

GEOLOGIC CROSS SECTION B-B'



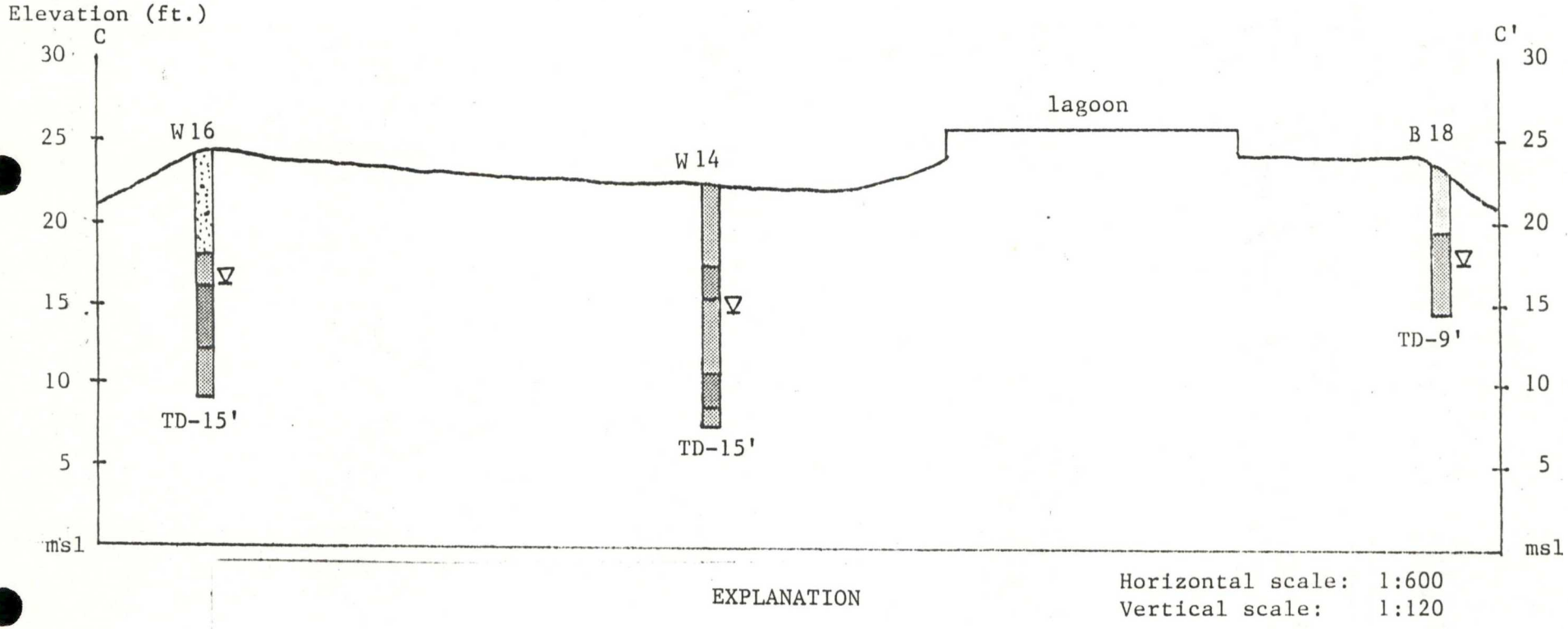
EXPLANATION

Horizontal scale: 1:600
Vertical scale: 1:120

- Debris, man-made materials
- Gravel, sand & gravel (coarse grained material)
- Sand, silty sand (medium grained material)
- Silt, clayey silt (fine grained material)
- Clay
- ∇ = Ground water level
- msl = Mean sea level
- W = Monitoring well
- B = Bore hole
- TD = Total depth

WESTERN PROCESSING COMPANY, INC.

GEOLOGIC CROSS SECTION C-C'



Horizontal scale: 1:600
Vertical scale: 1:120

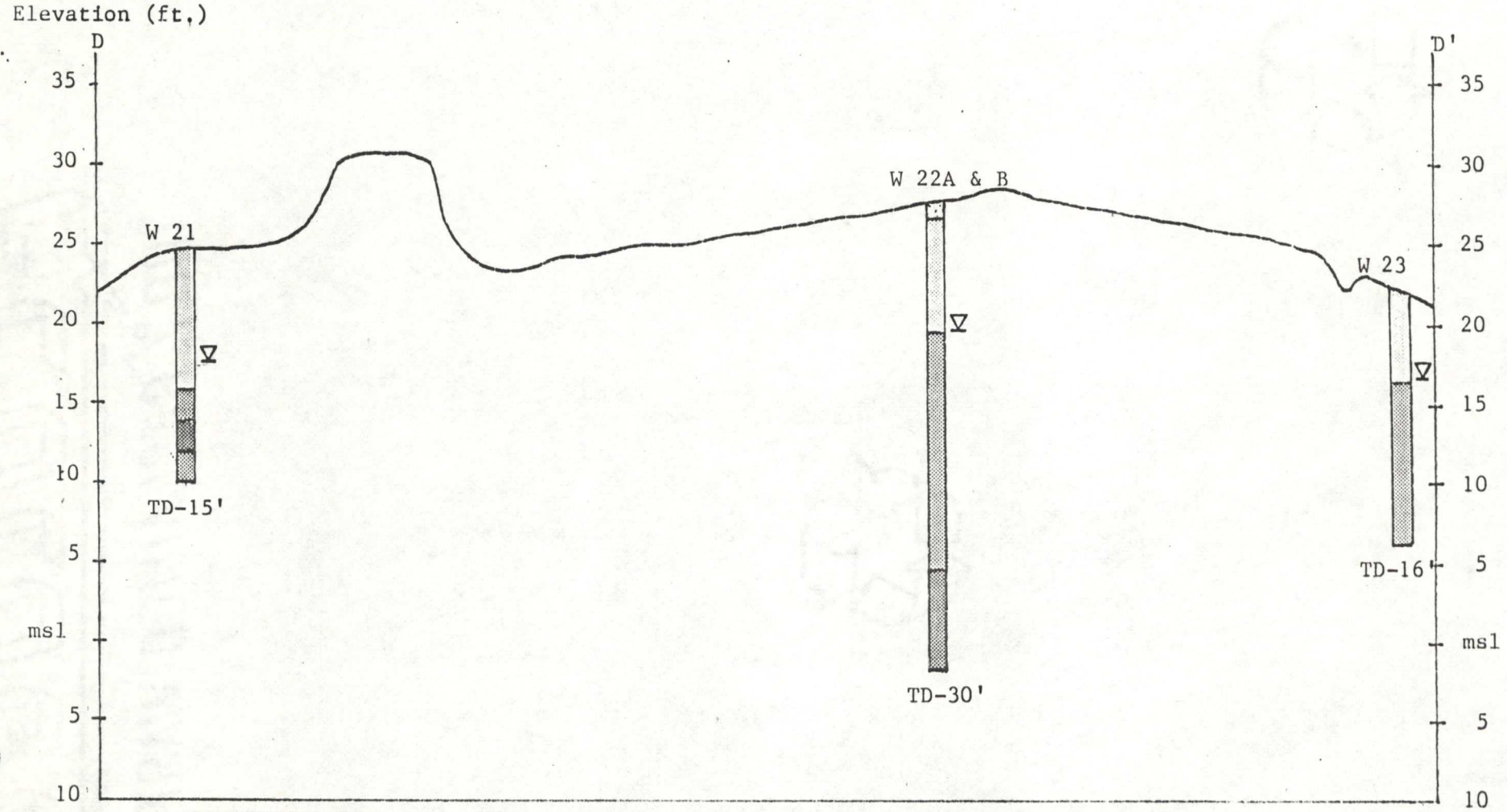
EXPLANATION

- Debris, man-made materials
- Gravel, sand & gravel (coarse grained material)
- Sand, silty sand (medium grained material)
- Silt, clayey silt (fine grained material)
- Clay

▽ = Ground water level
msl = Mean sea level
W = Monitoring well
B = Bore hole
TD = Total depth

WESTERN PROCESSING COMPANY, INC.

GEOLOGIC CROSS SECTION D-D'



EXPLANATION

Horizontal scale: 1:600
Vertical scale: 1:120

- Debris, man-made materials
- Gravel, sand & gravel (coarse grained material)
- Sand, silty sand (medium grained material)
- Silt, clayey silt (fine grained material)
- Clay

∇ = Ground water level
msl = Mean sea level
W = Monitoring well
B = Bore hole
TD = Total depth

BIBLIOGRAPHY

Aldis, Hussein, (July 7, 1982), Survey of Drainage and Industrial Development around Western Processing, Inc., Kent, Washington. Memorandum From Ecology and Environment, Inc., to Environmental Protection Agency. TDD 10-8203-04B.

Luzier, J.E. (1969), Geology and Ground-Water Resources of Southwestern King County, Washington, Water Supply Bulletin No. 23, Dept. of Water Resources, Olympia, WA.

Mullineaux, Donal R. (1970), Geology of the Renton, Auburn and Black Diamond Quadranges, King County, Washington. Geological Survey Professional Paper 672.